Saskatchewan
Tourism and
Small Business

REDBERRY LAKE MARKET OPPORTUNITY STUDY

April, 1984

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Saskatchewan Tourism and Small Business

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1. INTRODUCTION

This study is limited to identifying and quantifying the future market for rainbow trout fishing and ancillary services for tourists at Redberry Lake. The main objectives of the study are:

1) to examine Redberry Lake and the demand, by origin, for rainbow trout angling,
2) to examine existing tourism/recreation developments within and adjacent to Redberry Lake,
3) to identify the size and origin of potential users of Redberry Lake after the stocking program is complete,
4) to identify the type and nature of tourism/recreation services and facilities which may be required to serve the potential users of Redberry Lake, and
5) to recommend short term and long term development relative to current and future markets.

The study is based on three assumptions: (1) that rainbow trout is the most feasible species of fish for stocking in this lake based on the water conditions, the availability of certified disease-free stock, and the survival rates as per the experiments conducted by the Fisheries Branch of Saskatchewan Parks and Renewable Resources; (2) that the rainbow trout survival rate would be adequate to support a sportfishing industry; and (3) even though reference is made to a stocking program, no

specific dates for implementation can be assumed. The recommendations made throughout the paper are hypothetical until a stocking program is initiated. Therefore, figures and dates used are relevant up to year 1990 only.

2. BACKGROUND

2.1 Location

Redberry Lake is located approximately 60 miles northwest of Saskatoon, 20 miles north of the Yellowhead Highway, between Hafford and Krydor. The Lake is centrally located among three urban centers - Saskatoon, North Battleford, and Prince Albert, an area that covers approximately one-quarter of the province's population. (Figure 1). Its large size and relatively close proximity to a large urban and rural population provides for good resort potential.

2.2 Water Conditions

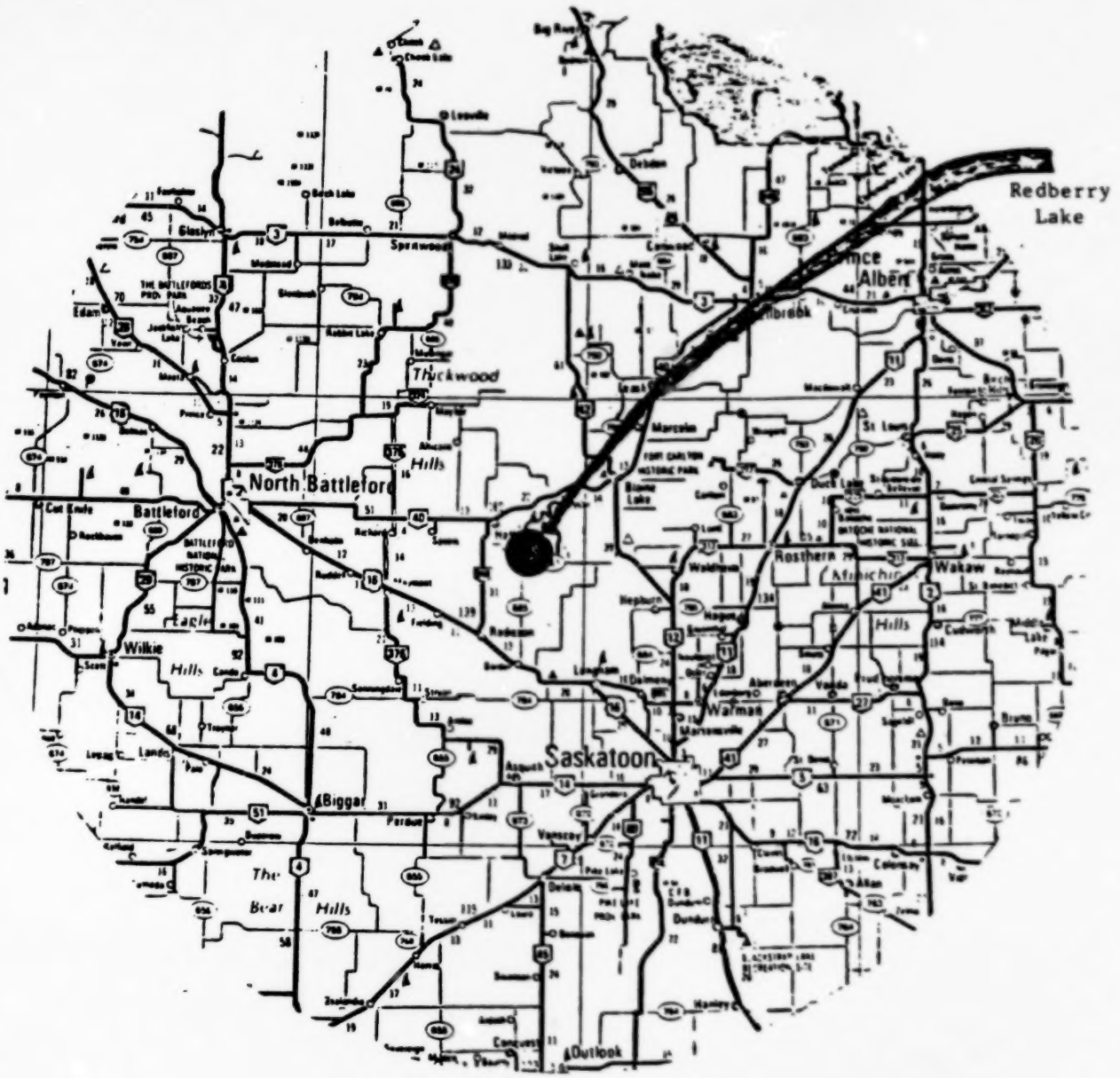
The Lake of 13,000 acres is the focus of a large region of interior drainage originating in the Redberry and Thickwood Hills, altitudes ranging from 1700 to 2000 feet above sea level. The maximum and average depths of the Lake are 85 and 45 feet respectively. The water is of a clear turquoise blue color but is of a saline content of 21,000 ppm and a measured pH of 8.7. The Lake is susceptible to significant seasonal and annual changes in water levels.

2.3 Fishery History

The increasing salinity of the Lake has been a limiting factor in developing a sport fishery in the Lake. Salinity levels

FIGURE 1 : REDBERRY LAKE AND SURROUNDING COMMUNITIES

(100 MILE RADIUS)



have risen from 13,000 ppm in 1940 to 21,000 ppm in 1979, an increase of approximately 1.6% per year. High salinity precludes natural reproduction for all freshwater fish species (Parks and Renewable Resources, Fisheries Branch, 1983). Therefore, the most feasible alternative is fish stocking. A commercially stocked whitefish fishery has been in existence since 1944, but the whitefish survival has declined since the mid-1970's, with now 20 fishermen commercially taking the fish by net in the winter season.

2.4 Recreational Potential

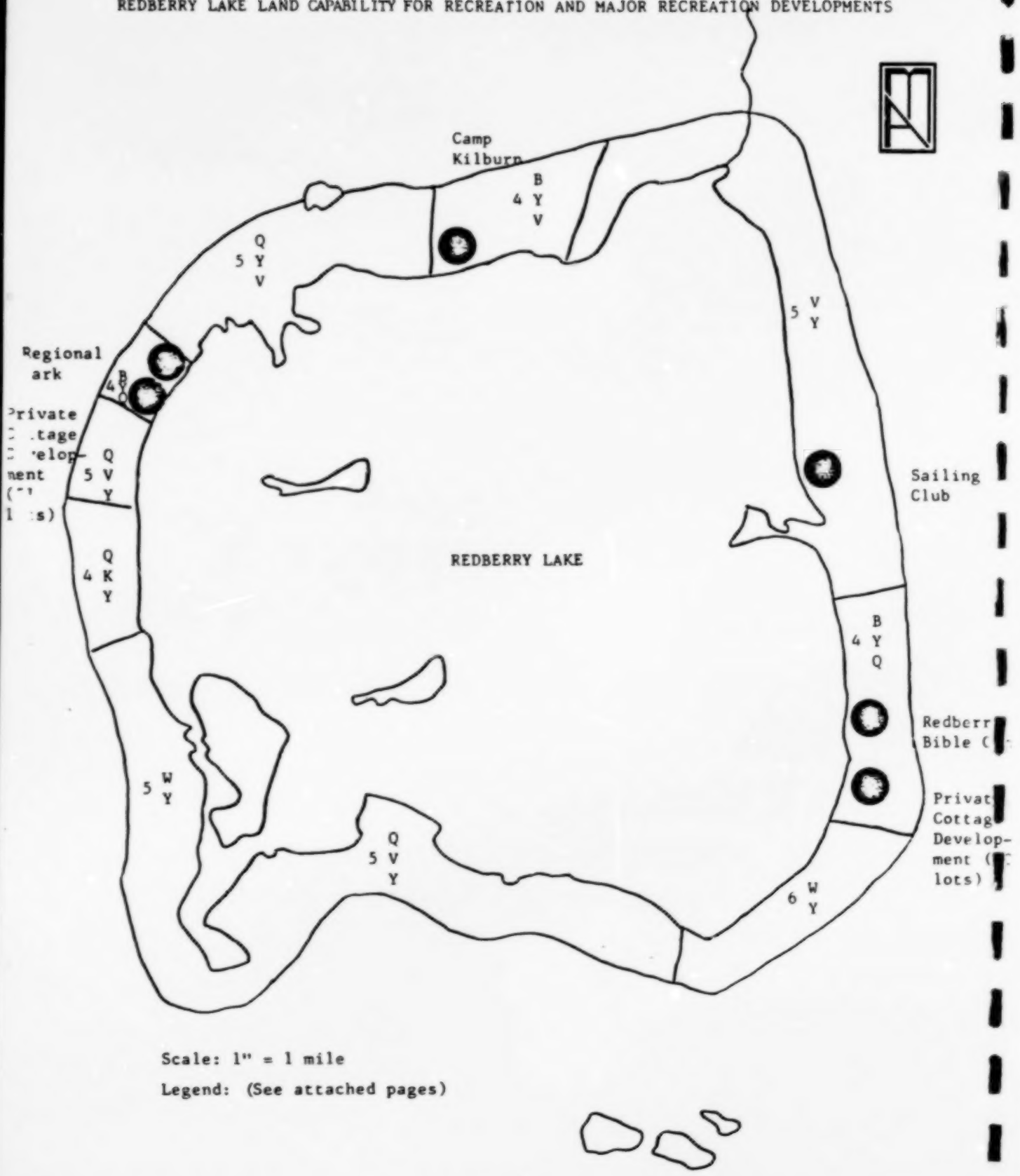
The Lake has moderate to low outdoor recreation capability, based on Environment Canada's Canadian Lands Inventory (Figure 2), and does still remain one of the few undeveloped lakes in the Saskatoon area. If Redberry Lake were to be developed as a fishery, it could relieve Lake Diefenbaker of some of its tourist and fishing pressure derived from residents of the Saskatoon area.

The main limitations for generating and sustaining water-based activities have been:

1) fluctuating water levels,
2) water salinity,
3) lack of sport fish, and
4) lack of trees.

FIGURE 2

REDBERRY LAKE LAND CAPABILITY FOR RECREATION AND MAJOR RECREATION DEVELOPMENTS



Scale: 1" = 1 mile

Legend: (See attached pages)

AND CAPACITY FOR
UTDOOR RECREATION

DESCRIPTIVE LEGEND

Seven classes of land are differentiated on the basis of the intensity of outdoor recreational use, or the quantity of outdoor recreation, which may be generated and sustained per unit area of land per annum, under perfect market conditions.

"Quantity" may be measured by visitor days, a visitor day being any reasonable portion of a 24 hour period during which an individual person uses a unit of land for recreation.

"Perfect market conditions" implies uniform demand and accessibility for all areas, which means that location relative to population centres and to present access do not affect the classification.

Intensive and dispersed activities are recognized. Intensive activities are those in which relatively large numbers of people may be accommodated per unit area, while dispersed activities are those which normally require a relatively larger area per person.

Some important factors concerning the classification are:

- The purpose of the inventory is to provide a reliable assessment of the quality, quantity and distribution of the natural recreation resources within the settled parts of Canada.
- The inventory is of an essentially reconnaissance nature, based on interpretation of aerial photographs, field checks, and available records, and the maps should be interpreted accordingly.
- The inventory classification is designed in accordance with present popular preferences in non-urban outdoor recreation. Urban areas (generally over 1,000 population with permanent urban character), as well as some non-urban industrial areas, are not classified.
- Land is ranked according to its natural capability under existing conditions, whether in natural or modified state; but no assumptions are made concerning its capability given further major artificial modifications.
- Sound recreation land management and development practices are assumed for all areas in practical relation to the natural capability of each area.
- Water bodies are not directly classified. Their recreational values accrue to the adjoining shoreland or land unit.
- Opportunities for recreation afforded by the presence in an area of wildlife and sport fish are indicated in instances where reliable information was available, but the ranking does not reflect the biological productivity of the area. Wildlife capability is indicated in a companion series of maps.

* **CLASS 1** LANDS IN THIS CLASS HAVE VERY HIGH CAPABILITY FOR OUTDOOR RECREATION.

Class 1 lands have natural capability to engender and sustain very high total annual use based on one or more recreational activities of an intensive nature.

Class 1 land units should be able to generate and sustain a level of use comparable to that evident at an outstanding and large bathing beach or a nationally known ski slope.

CLASS 2 LANDS IN THIS CLASS HAVE A HIGH CAPABILITY FOR OUTDOOR RECREATION.

Class 2 lands have natural capability to engender and sustain high total annual use based on one or more recreational activities of an intensive nature.

CLASS 3 LANDS IN THIS CLASS HAVE A MODERATELY HIGH CAPABILITY FOR OUTDOOR RECREATION.

Class 3 lands have natural capability to engender and sustain moderately high total annual use based usually on intensive or moderately intensive activities.

CLASS 4 LANDS IN THIS CLASS HAVE MODERATE CAPABILITY FOR OUTDOOR RECREATION.

Class 4 lands have natural capability to engender and sustain moderate total annual use based usually on dispersed activities.

CLASS 5 LANDS IN THIS CLASS HAVE MODERATELY LOW CAPABILITY FOR OUTDOOR RECREATION.

Class 5 lands have natural capability to engender and sustain moderately low total annual use based on dispersed activities.

CLASS 6 LANDS IN THIS CLASS HAVE LOW CAPABILITY FOR OUTDOOR RECREATION.

Class 6 lands lack the natural quality and significant features to rate higher, but have the natural capability to engender and sustain low total annual use based on dispersed activities.

* **CLASS 7** LANDS IN THIS CLASS HAVE VERY LOW CAPABILITY FOR OUTDOOR RECREATION.

Class 7 lands have practically no capability for any popular types of recreation activity, but there may be some capability for very specialized activities with recreation aspects, or they may simply provide open space.

Subclasses

Subclasses indicate the kinds of features which provide opportunity for recreation. They are, therefore, positive aspects of land and do not indicate limitations to use. Features may be omitted from a unit, either because of the imposed three-feature limit, or because their presence was unknown or unconfirmed.

The degree to which these features are judged capable, collectively, of generating and sustaining use for recreation, determines the class. The sequence in which they are listed indicates the order of their significance. Subordinate features may be relatively insignificant and the class of a unit should not be interpreted to indicate the capability of a secondary or tertiary feature.

The subclasses are:

SUBCLASS A—Land providing access to water affording opportunity for angling or viewing of sport fish.

SUBCLASS B—Shoreland capable of supporting family beach activities. In high class units this will include family bathing. In Classes 4 and 5, the activities may be confined to dry land due to cold water or other limitations.

SUBCLASS C—Land fronting on and providing direct access to waterways with significant capability for canoe tripping.

* SUBCLASS D—Shoreland with deeper inshore water suitable for swimming or boat mooring or launching.

SUBCLASS E—Land with vegetation possessing recreational value.

* SUBCLASS F—Waterfall or rapids.

* SUBCLASS G—Significant glacier view or experience.

SUBCLASS H—Historic or pre-historic site.

* SUBCLASS J—Area offering particular opportunities for gathering and collecting items of popular interest.

SUBCLASS K—Shoreland or upland suited to organized camping, usually associated with other features.

SUBCLASS L—Interesting landform features other than rock formations.

SUBCLASS M—Frequent small water bodies or continuous streams occurring in upland areas.

SUBCLASS N—Land (usually shoreland) suited to family or other recreation lodging use.

SUBCLASS O—Land affording opportunity for viewing of upland wildlife.

SUBCLASS P—Areas exhibiting cultural landscape patterns of agricultural, industrial or social interest.

SUBCLASS Q—Areas exhibiting variety, in topography or land and water relationships, which enhances opportunities for general outdoor recreation such as hiking and nature study or for aesthetic appreciation of the area.

* SUBCLASS R—Interesting rock formations.

* SUBCLASS S—A combination of slopes, snow conditions and climate providing downhill skiing opportunities.

* SUBCLASS T—Thermal springs.

* SUBCLASS U—Shoreland fronting water accommodating yachting or deep water boat tripping.

SUBCLASS V—A vantage point or area which offers a superior view relative to the class of the unit(s) which contain it, or a corridor or other area which provides frequent viewing opportunities.

SUBCLASS W—Land affording opportunity for viewing of wetland wildlife.

SUBCLASS X—Miscellaneous features with recreational capability.

SUBCLASS Y—Shoreland providing access to water suitable for popular forms of family boating.

SUBCLASS Z—Areas exhibiting major, permanent, non-urban man-made structures of recreational interest.

Note: Classes and Subclasses relevant to Redberry Lake marked

Source: Environment Canada, 1972, Canadian Lands Inventory, Recreation, Saskatoon-73 B

There is approximately 36 miles of shoreline on Redberry Lake. With the presently low water table, this provides for many miles of sandy beaches and sparse vegetation. Shallow inshore waters create some difficulties for cottage owners, but the Lake is well suited to boating and especially sailing.

Since 1968 when the Redberry Regional Park was established, development on the northwest corner in the park area has increased. Appendix A shows an inventory of the existing facilities, recreation programs, services, and accommodations for the Lake area, derived from the four major recreational developments (i.e., the Regional Park, the Redberry Bible Camp, the Saskatoon Sailing Club, and Kilburn Camp) and two cottage subdivisions totalling 71 lots and 46 cottages. Figure 2 shows the location of each of these sites with respect to the Lake.

2.5 Wildlife Habitat

The water area and the islands therein have been designated as a federal bird sanctuary since 1925, serving as a water fowl staging and breeding area for many species of colonial birds - of particular interest are the threatened white pelicans and double-breasted cormorants.

The wide expanses of sandy beaches support numerous shore-birds and other water and marsh species. Redberry Lake is the only large lake in this area, and the permanence of this water body enhances its value as a staging and breeding area.

Public recreational use of the Redberry Lake Bird Sanctuary is presently quite moderate but would increase substantially with sportfishing activity.

Further study would be required in order to determine the positive or negative impact of increased tourism on wildlife habitat, the impact of the water fowl on the fish population, and the impact of the fish stocking on the water fowl population.

3. TRANSPORTATION CHARACTERISTICS

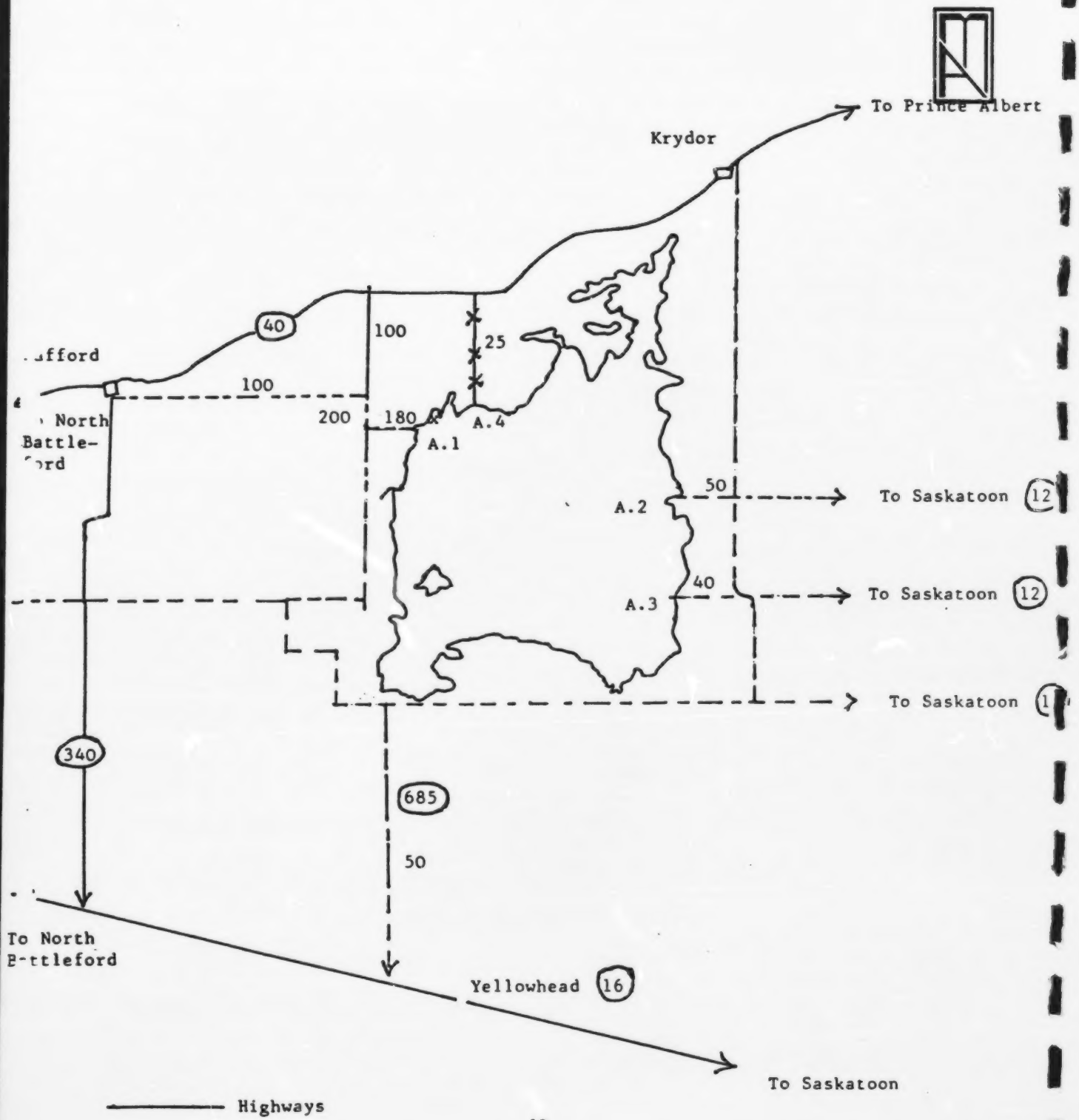
Redberry Lake is accessible by car year-round by three grid roads. (Figure 3, accesses A.1, A.2, and A.3). The entrance through the Regional park (A.1) is the major access to the Lake, with a traffic volume of approximately 180 vehicles per day. Accesses A.2 and A.3 each have a much less traffic volume (approximately 50 vehicles per day) with the main destinations being the Sailing Club and Bible Camp respectively. Access A.4 is a seasonal access with its main destination being Kilburn Camp.

At the recently measured average annual daily traffic of approximately 200 vehicles per day (July 13 - 22, 1981), the Regional Park grid road is already being utilized to capacity according to Saskatchewan Highways and Transportation sources. An increase in traffic volumes by 50% would warrant a paved highway for the four miles south of No. 40 highway, leading into the Park.

The most preferred route for visitors from Saskatoon to Redberry Lake is the Yellowhead Highway No. 16 via the grid road No. 685 and going north to meet the Regional Park entrance. If an access road was provided on the south or southeast corner of the Lake, this would serve several purposes:

FIGURE 3: ROADWAYS LEADING TO REDBERRY LAKE

AND TRAFFIC VOLUMES IN VEHICLES PER DAY



1) provide a shorter travel distance for tourists from the Saskatoon area,
2) provide additional access to the Lake and potential for marina facilities development,
3) reduce some of the traffic pressure to the Regional Park by providing access to another area for parking, camping, picnicking, launching boats, and fish cleaning,
4) provide an alternative destination for tourists other than the Regional Park, and
5) in the long term, provide a second area for tourism development if the demand warrants it.

4. DEMAND FOR SPORTFISHING OF RAINBOW TROUT

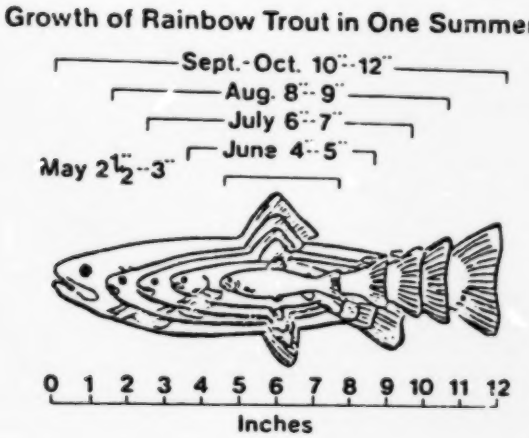
Stocking rainbow trout in the Lake would open the market for sportfishermen and add a new dimension to the total family recreation experience. Sportfishing at Redberry Lake could increase tourism in general by offering the unique opportunity of fishing in one of the largest inland trout fisheries in Canada aside from the Great Lakes.

4.1 Appeal for Rainbow Trout

This species of fish creates a demand in itself from sportfishermen because it is fun to catch, providing a good challenge to even the best fishermen. Other reasons for an interest in this fish over other species are:

1) they are easy to clean, with no filletting required,
2) they are a superb tasting fish, and
3) they grow at a relatively fast rate. A 2 1/2 to 3 inch fingerling stocked in May should provide a satisfactory fish size by the end of the first year. Figure 4 shows an approximate growth rate of a rainbow trout in one summer. Because of the many uncertainties associated with the growth rate predictions for trout in Redberry Lake, a 10 to 12 inch fish size in one year may be somewhat optimistic.

FIGURE 4



Source: Tourism and Renewable Resources and
Department of Northern Saskatchewan,
Proposed Goals and Strategies for Fisheries Management in the 1980's,
January 1981, p.56

4.2 Attraction of Anglers to this Area

Figure 5 indicates that in 1980 the West Central area of the province (in which Redberry Lake is located) ranked first as the preferred region of the province for resident anglers and ranked second for nonresident and total anglers. This would indicate that the location of Redberry Lake, in an already popular fishing area surrounded by a large rural and urban population, is a positive factor in the future development of the Lake as a fishery.

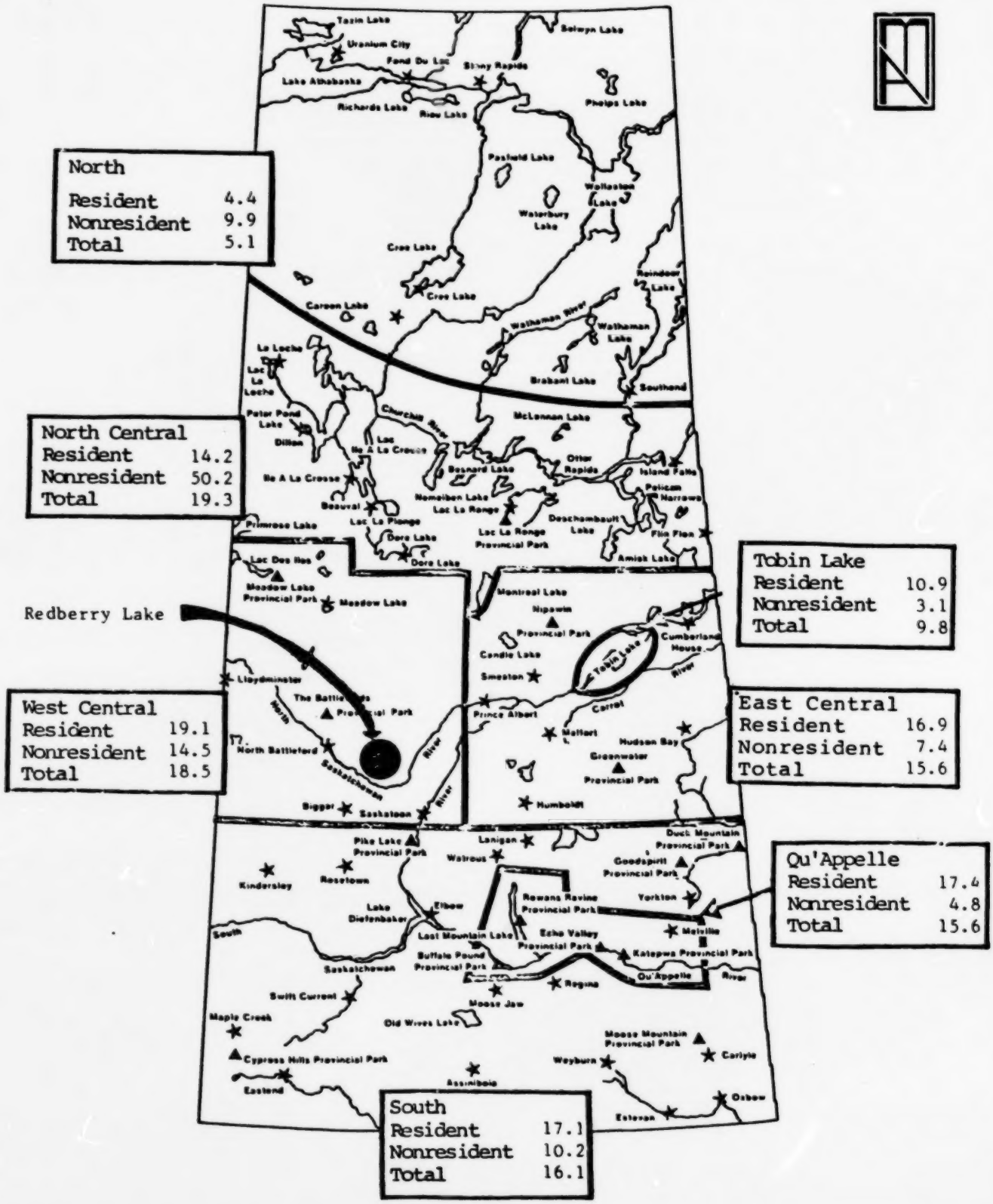
4.3 Origin of Anglers

A fishery at Redberry Lake would attract two types of anglers - those who are presently licensed anglers and new anglers.

4.3.1 Existing Anglers

Since the origin of anglers to the West Central area of the province, as indicated by Table 1.1, is 85.7% resident anglers, one can expect a similar pattern for a fishery at Redberry Lake. Another 13.4% of anglers to this West Central area are non-resident Canadians. Based on statistics for non-resident Canadian anglers to Saskatchewan, (Table 1.2), one could expect approximately 82% of these anglers to be from the two neighboring provinces of Alberta (53%) and Manitoba (29%). With the close proximity of the province of Alberta particularly (approximately 150 miles from the Alberta border) and easy

Figure 5. Percentage of angler days expended by resident, nonresident, and total anglers in Saskatchewan, 1980.



Source: Saskatchewan Parks and Renewable Resources
Sportfishing in Saskatchewan, 1980

ORIGIN OF ANGLERS

TABLE 1.1

ORIGIN OF ANGLERS TO WEST CENTRAL SASKATCHEWAN

	NUMBER	%
Resident Anglers	45,292	85.7%
Non-Resident Anglers		
Canadian	7,082	13.4%
Other	487	.9%
Totals	52,861	100.0%

TABLE 1.2

ORIGIN OF NON-RESIDENT ANGLERS TO SASKATCHEWAN

PROVINCE/STATE GROUP	NUMBER
Canadian	
Quebec	594
Ontario	1,543
Manitoba	8,580
Alberta	15,991
British Columbia	3,338
Canadian Total	30,046
Non-Canadian	
Mid Atlantic, U.S.A.	199
East North Central, U.S.A.	1,536
West North Central, U.S.A.	10,129
Mountain, U.S.A.	4,710
Pacific, U.S.A.	724
South Atlantic, U.S.A.	266
East South Central, U.S.A.	266
West South Central, U.S.A.	1,550
Other Countries	104
Non-Canadian Total	19,484
Grant Total	49,530

Source: Saskatchewan Parks and Renewable Resouces
Sportfishing in Saskatchewan, 1980

access via the Yellowhead Highway, this market is especially well worth developing, although Saskatchewan should develop marketing strategies designed to lure anglers from both provinces.

American anglers to this area of the province constitute less than 1% of the total anglers (Table 1.1). Americans are more attracted to the northern lakes of the province where they can engage in trophy fishing and experience the solitude and isolation of the Saskatchewan wilderness. One could anticipate that a small portion of these American anglers would spend an additional day or two at Redberry Lake while passing through the area while on their route home. This would only occur if the Lake was well publicized as a successful fishing area and if the services and facilities were available to support sport-fishing.

Using the example of Piprell Lake where the stocking program is exclusively rainbow trout, the origin of the clientele fishing at this lake, according to an outfitter in the area, is 95% Saskatchewan residents. The example of this more northerly lake, which attracts mainly trophy fishermen, would reinforce the fact that Redberry Lake will have a minimum American clientele, at least until the fish size is of greater appeal (at least four pounds).

4.3.2 New Anglers

Table 2 indicates that 95% of the visitors to the Redberry Regional Park over a two-year period of 1977 and 1978 travelled a distance of 100 miles or less to visit the Park. According to the Park Secretary, a similar pattern has been evident since 1978.

The majority of the people and organizations occupying the other major developed sites (Sailing Club, Kilburn Camp, Redberry Lake Bible Camp, and private cottages) are from Saskatoon and area.

Based on this past Regional Park and Lake usage, it can be expected that the origin of new anglers to Redberry Lake will be mainly local residents and visitors from the Saskatoon area who are already visiting the Lake area.

4.4 Size of Potential Demand

According to the Fisheries Branch, an estimated 44,049 residents of the West Central region of Saskatchewan held angling licenses in 1980. Of these, 36,812 or 84% actively fished. Based on 1980 Saskatchewan Sportfishing statistics of 13.3 angling days per resident angler, this number of licensed anglers in this region represents approximately 492,100 angler-days. Based on these statistics and population concentrations in the Saskatoon-North Battleford areas, the

TABLE 2

DISTANCE TRAVELLED BY VISITORS TO REDBERRY REGIONAL PARK

1977 AND 1978

DISTANCE TRAVELLED	% OF VISITORS TO THE PARK		
	1977	1978	TOTAL OVER 2 YR PERIOD
0 - 25 miles	34.5	0	17.25
26 - 50 miles	16.4	29	22.7
51 - 100 miles	39.3	71	55.15
Over 100 miles	9.8	0	4.9
TOTAL	100%	100%	100%

Fisheries Branch estimates that a successful sport fishery at Redberry Lake could readily capture one-fifth of the angling effort of the existing group of fishermen or approximately 100,000 angling days.

If the trends of the previous 30 years continue, it has been estimated that there will be 416,000 active anglers in Saskatchewan in 1990, an increase of 82% over 1980 or an average rate of 8.2% per year (Table 3). Using a slightly more optimistic rate of increase of 10% per year for new anglers as a result of a new stocking program, projections of demand in angler-days for the first five years at Redberry Lake are estimated in Table 4, totalling 133,100 angler-days by year five or approximately 10,000 anglers if each angler were to spend 100% of their angler days at Redberry Lake. Since this is very unlikely, one could optimistically predict an even greater number of anglers each spending a portion of their angling days at Redberry Lake. The figure of 10,000 anglers will be used throughout this report in order to provide conservative estimates during the developmental phase of the stocking program. The first year would be the stocking year and therefore would not produce fish of a reasonable catch-size (6 to 8 ounces) until October - based on statistics of angler effort by season for Saskatchewan (Figure 6), 86% to 95% of fishing effort takes place between May and September.

TABLE 3

ACTUAL AND ESTIMATED NUMBERS OF LICENSED AND ACTIVE ANGLERS FISHING IN SASKATCHEWAN, 1950, 1980, AND 1990

	1950	1980	1990
Licensed Anglers			
Saskatchewan	28,300	166,843	261,600
Other Canadians	5,100	30,046	53,700
United States	5,300	19,484	25,800
Totals	38,700	216,373	341,100
Active Anglers			
Saskatchewan	...	171,846	320,900
Other Canadians	...	34,894	65,800
United States	...	21,725	29,400
Totals	...	228,465	416,100

Source: Saskatchewan Parks and Renewable Resources, Fisheries Branch

TABLE 4

ESTIMATED FISHING DEMAND ON REDBERRY LAKE

	Year 1	Year 2	Year 3	Year 4	Year 5
# Angler-Days	Stock Year	100,000	110,000	121,000	133,100
# Anglers*	--	7,500	8,270	9,097	10,000

*It is asumed that each angler will spend 100% of their angling days at Redberry Lake.

FIGURE 6

(A) RESIDENT ANGLER EFFORT BY SEASON

(B) NON-RESIDENT ANGLER EFFORT BY SEASON

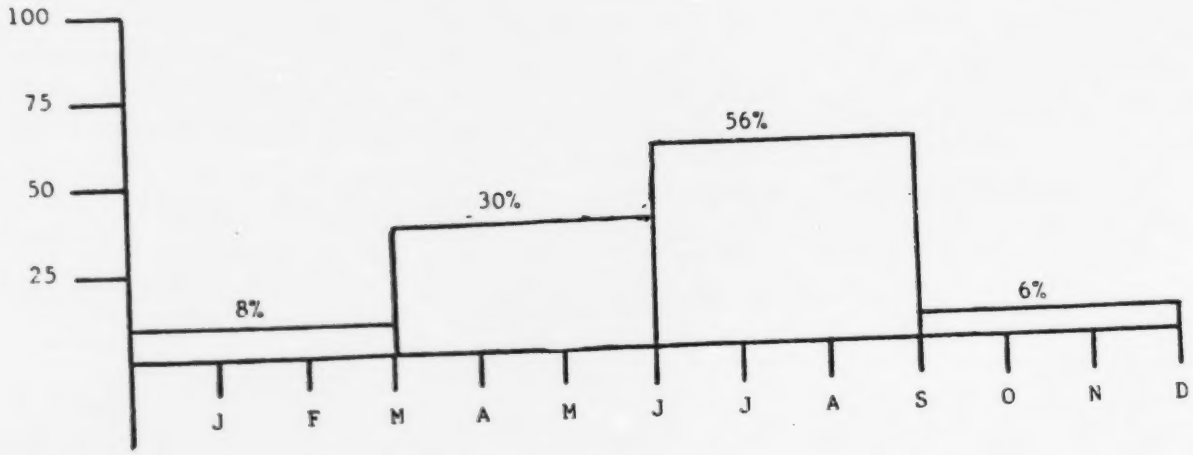


Figure 6.A

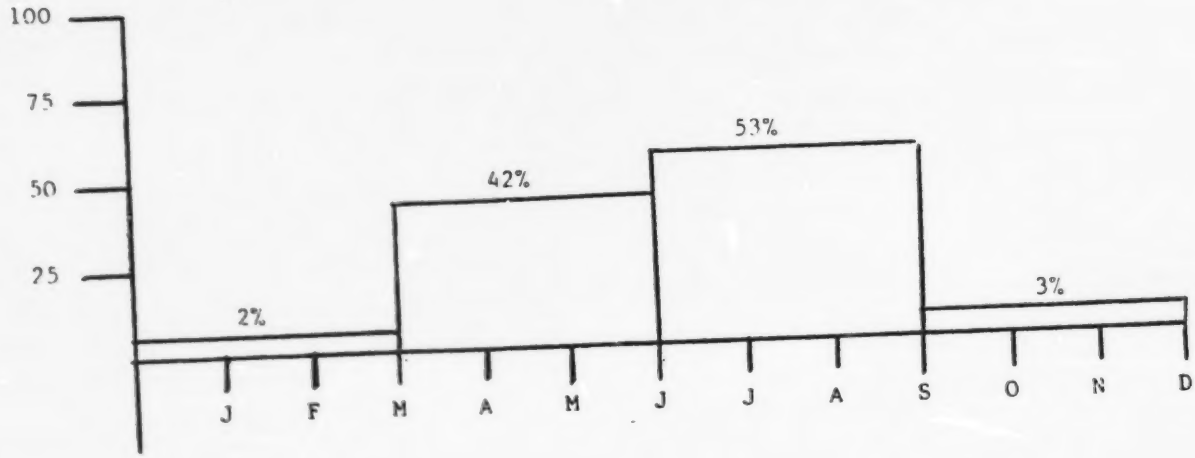


Figure 6.B

Source: Saskatchewan Parks and Renewable Resources
Sportfishing in Saskatchewan, 1980

4.5 Angling Pressure

At a proposed initial stocking of 650,000 fingerlings per year and a survival rate of 80% as proven out by two years of Fisheries Branch cage-stocking experiments, approximately 520,000 fish would be available to anglers each year. Assuming a harvest rate of 30% would mean a catch of approximately 155,000 fish per year or about 1.56 fish for every projected angler-day. According to the Fisheries Branch, this projection equals the present success rate at Lake Diefenbaker of 1.45 fish per angler-day. At this rate, the Lake would constitute a successful sport fishery for stocked waters.

The provincial average for sportfishing success is 2.68 fish caught per angler. If the fishing pressure on a stocked Redberry Lake attains 100,000 angling days per year, a possible doubling of the proposed stocking rate may have to be planned in order to sustain successful sportfishing.

5. ANGLING SUCCESS

The main reservations for tourism and recreational facility development associated with the Redberry Lake stocking program are related to the risks involved because of the uncertainty of the fish survival and the resultant harvest success over the life span of a rainbow trout or approximately four to five years. Many factors will affect the success of this fishery, some of which are as follows:

1) the salinity of the water,
2) the temperature of the Lake,
3) the water quality,
4) food supply,
5) strength of the strain of trout being stocked,
6) the size of the fish being stocked,
7) the impact of predators on the fish, i.e., pelicans, cormorants, terns, and gulls, and
8) the size of the planting relative to the size of the Lake.

All of these factors must be monitored carefully for the first four or five years in order to determine the main factors attributing to the survival rate and harvest success of the Lake. Until the angling success is well established, there will be little necessity for major tourism and facility developments.

In order to test out some of these uncertainties, it is recommended that the fishery be initiated on a pilot project basis with the proposed 650,000 fingerlings per year for each of two or three years.

6. SERVICES AND FACILITIES REQUIRED

6.1 Services Required for a Fishing Resort

The services necessary to attract tourists and increase overnight stay traffic at a fishing resort are listed below. Those which are presently available within the Regional Park are marked *.

1) rental accommodations - cabins, available for ice-fishing enthusiasts in the winter,
*2) food services (groceteria and fast-food services),
*3) parking,
4) dock,
*5) toilets and sanitary services (only outdoor toilets presently exist),
*6) drinking water,
*7) picnic area,
*8) campgrounds,
9) boat rental,
10) showers,
11) laundromat,
12) fish cleaning stations (two per boat launching area),
13) rods and fishing tackle vendor
*14) fishing license vendor,
15) service shop and gas pumps for boat servicing, and
*16) telephone.

6.2 Facilities Required

In the short run, until the fishing success has been determined (two to three years), efforts should be made to improve and expand the existing facilities in the Regional Park in order to provide the base services on a small scale. The concession operator has the space and facilities to expand his product lines to include fishing rods and tackle and possibly some minor boat repair items if the demand warranted them. Plans are presently underway to provide showers at the beach changehouse. Fish cleaning stations must be provided to prevent disease contamination of the Lake. These should be located near the boat launch for easy access by the fishermen. A dock should be built near the boat launch area. Gas pumps, boat rentals, and a more sophisticated repair service would only be required as the fishing pressure on the Lake increased enough to warrant private investment (two to three years of good fishing success). There is space available for additional cottage or cabin development both within the Regional Park and on the existing cottage development on the east side of the Lake. There has been some discussion locally of an additional subdivision adjacent to this latter subdivision. Once the success of the stocking program was better established, one could expect to see more private investment in property, facilities, rental accommodations, and marina services.

In the long run, alternate facilities and services other than those in the Regional Park may be required in order to accommodate the increasing demand for rainbow trout and the growing number of tourists. An access road on the south or southeast side of the Lake, as mentioned in Section 3, could provide access to additional parking, boat launch, dock, picnic, and camping facilities. At least two more fish cleaning stations should be made available. Consideration should be given at this site for space to establish a second complete outfitting service if necessary.

At Piprell Lake, the main sources of revenue for the outfitter, in order of importance to his business, are:

1) cabin rentals,
2) boat rentals,
3) store/food services, and
4) laundromat and showers.

After the angling success of Redberry Lake is established, further study is recommended to determine the potential for private investment for a lake of this size and angling pressure. At this time, comparisons should be made of the services and facilities provided by successful fishing resorts in other parts of the province to determine the size of facilities required, utilization rates, occupancy rates, seasonality, and most appropriate locations for development.

6.3 Accommodation Requirements

Most parks in Saskatchewan are equipped with campgrounds rather than fixed-roof accommodations. These campgrounds can accommodate tents, tent trailers, cabin trailers, truck campers, and motor homes. Where fixed-roof accommodation is available, these occupancy rates are on average nearly double that of campgrounds (Table 5). While the stocking program is in its developmental stage, no fixed-roof accommodations are advised. On a trial basis, several cabins should be constructed for rental purposes after two or three years of fish stocking and proven fishing success. There would be an expected demand for cabins if fishing success is good, especially during the late spring and fall when the weather is cooler and sport-fishing is more popular.

6.3.1 Present Requirements

Based upon tourist accommodation patterns in provincial parks in Saskatchewan in 1982 and the present number of visitors to Redberry Regional Park (12,500 people), the accommodation requirements for the existing tourist population are estimated at approximately 150 camping sites at an estimated 90% occupancy rate (Table 6). The present number of 62 sites should, therefore, be at least doubled in order to accommodate present visitor requirements.

TABLE 5

AVERAGE OCCUPANCY RATES FOR CAMPGROUNDS AND COMMERCIAL ACCOMMODATION FOR PROVINCIAL PARKS IN SASKATCHEWAN

	OCCUPANCY RATE (%)	
MONTH	CAMPGROUNDS	COMMERCIAL ACCOMMODATION
May	13.8	36.7
June	22.4	52.7
July	66.5	94.3
August	42.6	83.2
September	17.6	53.8
Average	39.3	64.0

Source: 1982 Visitation and Outdoor Recreation Statistical Report, Saskatchewan Tourism and Renewable Resources

TABLE 6

CAMPGROUND ESTIMATES FOR REDBERRY LAKE

	PRESENT	5-YEAR PROJECTION[1]
# of Visitors	12,500	22,500
# of Visitors Requiring Campsites @ 20%[2]	2,500	4,500
Estimate[3] # of Camping Weeks Per Year	15	15
Average # of Campsites Required Per Week	167	300
# of Campsites Required @ Occupancy Rate of 90% of Weekly Demand	150	270

1. Starting with the present number of visitors @ 12,500 and adding the estimated number of anglers per year over a 5-year period as per Table 4.

2. Estimate based on provincial statistics of 20% of all travellers requiring camping accommodations and 1982 provincial park visitation statistics of 819,015 vehicles (estimated at 3,276,060 visitors @ a party-size of 4 visitors per vehicle) and a total number of camper-days of 653,891 or 20% of the total visitors utilizing camping accommodation.

3. 1982 Visitation and Outdoor Recreation Statistical Report, Saskatchewan Parks and Renewable Resources.

6.3.2 Future Requirements

If the number of tourists to the Lake nearly doubles over the first five years of the stocking program as is projected in Table 6, a second campground of approximately 120 units would be required. The amount of additional use would probably warrant additional servicing facilities in a different location in order to accommodate all of the Lake users.

6.4 Recreational Services and Programs

The recreational services and programs over the summer at the Regional Park will be an important factor in increasing the length of stay of families to the Lake. Swimming lessons should be continued, along with a full-time recreational program for the months of July and August when children are home from school. A recreational program of this nature will encourage families to stay at the Park longer, possibly even for the duration of their swimming lessons (usually two weeks in length). Fishing would be one more recreational activity to entice the visitors to spend more days at the Lake. These recreational activities do not require additional facilities but do require manpower and money to develop a well rounded program for visitors. A recreation hall is available for programs during inclement weather. Additional recreational activities that could warrant capital expenditure for

facilities could include tennis courts, outdoor swimming pool as an alternate facility to the saline lake similar to the pool at Buffalo Pound (showers, change rooms, etc.).

Ice fishing would be a new fishing activity available. In the short run, this would not necessitate any additional facilities or services. In the long run, one outfitter with winterized cabins may be required, thus providing a year-round outfitting service.

6.5 Educational Facilities

In order to capitalize on the wealth of flora, fauna, wildlife, fish and game of the area, an "interpretive centre" in the Regional Park, possibly as an expansion of existing facilities, would be an excellent means of presenting tourist information to visitors and educating them of the area. The centre would be a means of increasing tourism to the area by providing an attraction for bus tours, school groups, and out-of-province visitors and a means of publicizing the Lake and its activities, facilities, and services.

This facility could be used as a support facility for the recreational program, providing a threatre or lecture room with audio-visual equipment.

The centre could include:

1) displays,

2) washrooms adequate for school groups,

3) concessions,

4) aquariums of rainbow trout,

5) lecture or theatre room, and

6) tourist information.

7. MAJOR IMPACT

7.1 Recreational

Angling success need not mean trophy fishing. During the early years of the stocking program while the fishing success is still being determined, the success of Redberry Lake should be gauged less on catch size and more on the total concept of enjoying a few days at the Lake, part of which is a fishing experience. It is necessary to keep this in mind because the main clientele will be families from the surrounding area, many of whom may not be serious fishermen.

The inclusion of a fishing experience in the total recreational program provides incentive for visitors to spend more time at the Lake. Without recreational activities at the campsites, it will be difficult to increase visitor overnight stay to even the provincial average of 2.4 nights per visitor. This limits the tourist dollars that can be obtained.

7.2 Tourism

The tourist industry is the third largest revenue-generating industry in the province. As such, it must be nurtured and made even more productive. Sportfishing at Redberry Lake will be a great attraction to visitors and local residents alike. A fishery at Redberry Lake could make a significant contribution to the other 94,000

lakes in the province responsible for supporting the sportfishing industry. According to estimates of the Fisheries Branch, 92% of Saskatchewan's population resides in the southern half of the province where only 10% of the available water bodies exist. Based on this information, it is quite feasible that Redberry Lake could rival the potential significance of Lake Diefenbaker in meeting the needs of a growing angling population in this southern half of the province.

Increased revenues to the province as a result of this fishery will make a contribution, although relatively small, to the enhancement of the sportfishing industry throughout the province. Such revenues can be used to provide more rearing ponds for production of native and exotic species to increase fish supplies and meet demands by anglers for more fish, to develop new waters, to improve habitat in existing waters, to restore fisheries that have collapsed, to clean up polluted waters, to reclaim spawning areas, and to develop new areas.

In order to maximize tourism dollars, the features of Redberry Lake and area, i.e., camping services, sailing, bird sanctuary, rainbow trout fishery, recreation programs, etc., should be marketed to the general public to encourage more visitors to the Lake and to publicize the availability of a new fishing experience.

7.3 Economic

Table 7 indicates that each resident angler in 1980 in the West Central region of Saskatchewan spent an average of $132 per year or $17.64 per angler day on services related to the fishing industry. At this rate, expenditures for one year for Redberry Lake fishermen could range from $1.8 to $2.3 million (Table 8). Using a provincial income multiplier of 1.33, this would generate $2.3 million to $3.1 million in revenue for the province.

One must also project the revenues generated by major purchases and investment attributable to sportfishing. Table 9 indicates an additional expenditure of $367 per resident angler on fishing equipment, boats, camping equipment, vehicles, land, and buildings. Estimating an average of 10% increase in new anglers in this region each year who would be making major purchases related to sportfishing, expenditures on major purchases for new anglers could total approximately $1.4 million to $1.8 million or $1.8 million to $2.4 million in revenues to the province (Table 10).

With the initial stocking cost of less than $100,000 per year for 650,000 finglerlings and potential total revenues of $4 million to $5.5 million per year, the possible return on investment is excellent if the facilities and services were available to support the stocking

TABLE 7

DIRECT EXPENDITURES BY ACTIVE RESIDENT ANGLERS IN THE WEST CENTRAL AREA OF SASKATCHEWAN IN 1980

EXPENDITURE CATEGORY	$
Travel Costs	1,786,462
Food	1,505,590
Package Deals	0
Fishing Supplies	740,126
Lodging	507,663
Household Boat Costs	618,483
Boat Rentals	202,506
Campsite Fees	281,489
Fishing Licences	160,245
Bait	40,792
Guide Services	1,418
Other	152,852
Totals	5,997,626
Average/Angler	132.42
Average/Angler-Day	17.64

Source: 1980 Survey of Sportfishing in Saskatchewan, Fisheries Branch

TABLE 8

PROJECTED EXPENDITURES ON SPORTFISHING FROM REDBERRY LAKE

	Year 1	Year 2	Year 3	Year 4	Year 5
No. of Angler-Days	Stock Year	100,000	110,000	121,000	133,100
Angler Expenditures @ $17.64/Angler-Day/ Year (in $000's)	--	1,764	1,940	2,134	2,348

TABLE 9

DISTRIBUTION OF MAJOR PURCHASES ATTRIBUTABLE

(IN WHOLE, OR IN PART) TO SPORTFISHING IN SASKATCHEWAN

Expenditures	Resident	NONRESIDENT		Total
		Canadian	Other	
Total ($'000)	61,245.9	265.6	14.4	61,525.8
		Percent		
Fishing Equipment	1.2	6.0	33.6	1.2
Boats and related equipment	51.8	47.3	28.4	51.8
Camping equipment	9.5	41.1	29.9	9.7
Special vehicles (ATV's etc.)	33.0	--	--	32.8
Land/buildings	1.7	--	--	1.7
Other	2.8	5.6	8.1	2.8
Totals	100.0	100.0	100.0	100.0
Average $ per angler	367.02	8.81	0.78	284.30

Source: Saskatchewan Parks and Renewable Resources
Sportfishing in Saskatchewan, 1980

TABLE 10

PROJECTED EXPENDITURES ON MAJOR PURCHASES

RELATED TO SPORTFISHING FROM REDBERRY LAKE

	Year 1	Year 2	Year 3	Year 4	Year 5
# of Anglers in in West Central Region @ 8.2%/Yr Increase	37,000	40,034	43,068	46,102	49,136
Total West Central Expenditures @ $367/Resident Angler ($000's)	13,579	14,692	15,806	16,919	18,034
Expenditures Related to New Anglers* ($000's)	1,358	1,469	158	1,692	1,803

*Expenditures attributed to new anglers as a result of the Redberry Lake fishery are estimated at 10% of the total expenditures for new anglers for the West Central region.

program. To what extent these services and facilities should be provided, can only be determined following the angling success history, but it must be noted that both stocking and service provision are necessary to assure the success of the projected sport fishery.

7.4 Human Impact on Wildlife

Due to the decline in breeding colonies of white pelicans and cormorants, protection of their habitat is essential. To date, the human impact due to recreation and tourism has been minor. Sailing has been popular but relatively few motor boats have been used on the Lake. The development of the Regional Park has lead to an increased use and subsequent increased human impact on the area. The stocking of trout would again increase the numbers of people using the water area as a result of:

1) an increase in seasonal and possibly permanent visitors of the area through increases in cottage subdivision development,
2) winter as well as summer sportfishing activity on the Lake, and
3) increased use of motor boats, a necessary "vehicle" for catching rainbow trout; therefore, better access to the islands.

As a result, several precautions would be recommended with respect to wildlife protection:

1) the location of any major developments (cottages, roadways, parking lots, campgrounds, etc.) be reviewed and approved by provincial and federal wildlife authorities so as to cause the least disturbance to the natural wildlife habitat, and
2) floating signs be "posted" around the island areas prohibiting visitors from entering the islands and disturbing the birds during the nesting period.

8. RECOMMENDATIONS

In general, caution is recommended with respect to the development of major tourist support facilities and services until fishing success is better established over a four to five year period. Because of the uncertainties related to fish survival and harvest success, a two or three year pilot project is recommended at the proposed stocking rate of 650,000 fingerlings per year. In the meantime, existing Regional Park facilities/services should be expanded and improved and a marketing strategy developed for the area in order to attract tourists and sportfishermen to the Lake. The most immediate facilities should include showers, a dock, expanded product lines to include fishing supplies in the Park store, two fish cleaning stations, a second boat launch, camping facilities of approximately 90 additional sites, and an area for distribution of tourist information. Additional facilities in the long run may include tennis courts and playground improvements.

In the long run with an anticipated 50% increase in the number of anglers over the next five year period to approximately 55,000 for this region or approximately 10,000 at Redberry Lake, additional facilities would be required at an alternate site, preferably on the south or south-east side of the Lake to accommodate Saskatoon anglers.

This site should include:

1) cabins to accommodate overnight visitors, phased in with an initial development of a maximum of five cabins to test on a trial basis once fishing success is established,
2) gas pumps,
3) a second store, including a fish license vendor,
4) an additional 120 campsites,
5) one more boat launch, one dock,
6) picnic area and sheltered kitchens,
7) toilets and sanitary services, and
8) drinking water supply.

More general recommendations include:

1) consultation with provincial and federal wildlife authorities before any major developments take place,
2) documentation of annual Lake usage by means of visitor surveys to include participation in activities, length of visit, purpose of visit, number in party, age of visitors, distance travelled, type of accommodation used, opinion on facilities and services, recommendations for improvements, and general comments,
3) better publicity on the area through brochures, publications, educational materials, and interpretive programs,

4) development of a full-time summer recreational program at the Regional Park,

5) better posting of the island and water areas for wildlife protection,

6) consideration, in the long run, for stocking additional species of certified stock, e.g., salmon, arctic char,

7) development of an interpretive and tourist centre at the Regional Park,

8) documentation of angling success,

9) once angling success has been established, a further study to determine the potential for private investment for a lake of this size and use, and

10) conscientious management of the existing services and facilities in order to leave visitors with a positive impression of the area.

APPENDIX A

APPENDIX A

INVENTORY OF FACILITIES/SERVICES/RECREATION ACTIVITIES ON OR ADJACENT TO REDBERRY LAKE

1. Regional Park

1.1 Accommodation

Private Cottages - 42 of 51 lots occupied - 3 winterized

Campsites - 12 electrified

- 50 non-electrified

1.2 Services

Concession/Groceteria

Telephone

Canoe Rental

Golf Clubs Rental

Hunting/Fishing License Vendor

1.3 Recreation Facilities

Beach Area	Playground
Buoyed Swim Area	Sports Field
Beach Change House	Ball Diamond
Outdoor Toilets	Amphitheater (outdoor)
Boat Launch	Golf Course - 9 holes sand greens
Picnic Grounds	Recreation Hall
Kitchen Shelter (2)	

1.4 Recreation Activities

Summer	Winter
Recreational Swimming	Cross Country Skiing
Swimming Lessons	Tobogganing
Boating	
Water Skiing	
Sailing	
Canoeing	
Horseshoes	
Golfing	
Camping	
Picnicking	
Babushka Days (Folk festival and local festivities)	

2. Redberry Bible Camp (private) - accommodates approximately 90 people; year-round facilities to accommodate church groups in the summer and school groups in the winter.
3. Saskatoon Sailing Club (private) - serves approximately 80 sailing club members; seasonal facilities.
4. Kilburn Camp (private) - services and facilities for 15 to 20 campers who are juveniles from Kilburn Hall in Saskatoon, a short-term treatment institution; seasonal facilities.
5. Cottage Development - 20 lots with only 4 occupied; seasonal.